INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
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Michael R. Pence
Governor
Thomas W. Easterly
Commissioner

February 20, 2014

Mr. Peter Cappel
AIMCO
4582 S. Ulster Street Parkway
Suite 1100
Denver, CO 80237

Re: Review of Remediation Work Plan
Michigan Plaza
3801-3823 West Michigan Street
Indianapolis, IN
VRP # 6061202

Dear Mr. Cappel:

This office has completed review of the Remediation Work Plan (RWP) submitted for the Michigan Plaza site located in Indianapolis, Indiana. The RWP was evaluated to determine consistency with the Indiana Department of Environmental Management (IDEM)'s Voluntary Remediation Program (VRP) guidelines. During the review of the document comments were generated that need to be addressed before an RWP can be approved by this office.

General Comments

1. The RWP must specify the remedial objectives for the site and explain how these objectives will be achieved. While an RWP may propose more than one remedial objective there should be milestones and timelines associated with each objective that indicate when a decision point has been reached. The RWP should specify the decision points where active remediation efforts would begin and end and when application of property restrictions would be considered. A timeline indicating the anticipated duration of the active remediation, the monitoring schedules, and reporting deadlines should also be included.

2. The RWP states that depending on the actual exposure conditions and chemical trends a site-specific risk assessment may be performed in order to select final cleanup objectives. No information was included on what conditions or trends would prompt the submittal of the risk assessment. Please be advised that a site-specific risk assessment will need to be reviewed and accepted by IDEM. Since this may result in cleanup objectives that are different than those in the current RWP, an RWP addendum and additional public notice and approval period would be required if this RWP is approved.

3. According to the document, a site closure report will be submitted either when indicator compounds are below remedial objectives for eight quarters or when the plumes have been determined to be stable or decreasing via statistical analysis or sequential dechlorination transport modeling. Additional information should be provided on what statistical analysis and sequential dechlorination transport modeling will be used and how the analysis and modeling will be done.

4. According to the Summary of Background Concentration Assessment portion of the RWP, wells MMW-11D, MMW-13D, MMW-14D, MW-165D, MW-166D, MMW-4D, and MMW-5D will be used to calculate a background concentration to distinguish between impacts from Michigan Plaza and Genuine Parts. No details were provided on how the background concentration would be calculated. Further in the document there is a discussion of using a plume flux and mass discharge evaluation in order to determine background conditions. It is assumed that the proposed wells for the background concentration assessment would also be used to evaluate plume flux. Since these wells are scattered throughout the apartment property and are screened at varying depths they are not appropriate for evaluating plume flux. Monitoring wells MMW-4D, MMW-5D, MMW-6D, and MW-165D are a potential northern flux line while wells MMW-11D, MMW-13D, MMW-14D, and MW-174D are a potential southern flux line. In order to eliminate data gaps the northern line would need a deep well east of MMW-4D and the southern line would need a deep well between MMW-13D and MW-174D. In addition, a baseline mass flux should be included in the RWP and will need to be reevaluated periodically as conditions change.

5. Since the RWP was submitted there has been a great deal of additional investigation and mitigation of methane near the former Michigan Plaza and Maple Creek Village Apartments. This information should be summarized and incorporated into the RWP.

6. As mentioned in IDEM's June 22, 2011 letter regarding the review of the Request for Revised Remediation Work Plan Approval, IDEM cannot concur that the deep contamination across the site is wholly the responsibility of Genuine Parts. The understanding of the plume extent, release mechanisms, and geologic and hydrologic characteristics has changed significantly since the 2007 RWP. However, there are still unanswered questions about the source mass and vertical extent of contamination. Only when all the data was compiled in this document, did many of the data gaps become more evident. Consequently, the conceptual site model needs to be updated to address the gaps noted below and then utilized to revise the remedial strategy accordingly. Keep in mind, an RWP cannot be effectively implemented or approved until the full extent of contamination is delineated and its behavior in the geologic environment is understood.

7. The U.S. EPA is currently conducting an analytical and hydrogeological evaluation of the West Vermont Street Area which includes Michigan Plaza and the Maple Creek Village Apartments. The purpose of this investigation is to evaluate the source, or sources, of vinyl chloride detected in three drinking water wells in the residential area of the west of Michigan Plaza. As a result, IDEM is withholding any comments regarding the source of vinyl chloride in the residential wells until the U.S. EPA has made a determination of responsibility for the contamination.

Specific Comments

1. Many of the interpreted extents of contamination shown on figures and cross-sections in the RWP are not supported by data. This includes, but is not limited to:
    - The Michigan Plaza soil source areas are depicted as narrow boxes with defined edges on many of the figures. A review of the comprehensive soil results show that none of these boxes are fully defined by uncontaminated samples. Additionally, these areas do not take into account high levels of contamination, detected just below the water table in KB-24, MMW-P-07, MMW-P-08, MMW-1S,

and MMW-10S. Other borings in the vicinity were either not sampled in intervals of highest field screening or were only sampled for groundwater contamination. Consequently, the source area footprint is not well delineated and the mass and extent of contamination is likely underestimated.

- Figure 31i (Cis 1,2-DCE in Groundwater Analytical Map Deep) and Figure 31k (VC in Groundwater Analytical Map) depict interpreted 2005 pre-injection deep DCE and VC plumes. However, wells in the center of the interpolated plumes were not installed until years later.
- Figure 31j (Cis 1,2-DCE in Groundwater Analytical Map Deep – 2nd Quarter 2013) shows deep contamination above 500 ug/L extending southward from Little Eagle Creek to MW-166D and MMW-14D. There are no other deep wells in this concentration area to confirm its existence. Furthermore, the shape of the plume is counter to known and interpreted groundwater flow directions. The plume in generally shown to be orientated to the southwest which is inconsistent with the stated south-southeast groundwater flow in the RWP and the deep groundwater potentiometric surface map illustrated in Figure 15.
- Figure 31l (VC in Groundwater Analytical Map – Deep – 2nd Quarter 2013) and Figure 31p (Geological Cross-Section A-A' – VC in Groundwater) depict a 'finger' of vinyl chloride greater than 100ppb extending southward over 1000 feet from Little Eagle Creek to near the Floral Park Mortuary. The three wells that fall within this interpreted plume are all within 200 feet of Little Eagle Creek. The remaining extent of the plume is drawn without supporting monitoring well data. In addition, Figure 31p depicts vertical delineation of contamination in Source Area C at MMW-10S. There are no data to support the vertical delineation of vinyl chloride at this location.
- Revised Figure 31s (Geological Cross-Section B-B' – cis 1,2-DCE in Groundwater) depicts shallow cis-1,2-DCE impacts greater than 100 ug/L at the location of MW-165S. Monitoring well MW-165S (which is not shown on the figure) is co-located with MW-165D and has had less than 5 ug/L cis-1,2-DCE since March 2007, not greater than 100 ug/L as illustrated on the figure. The figure also depicts vertical delineation of contamination at MMW-P-06. There are no data to support the vertical delineation of cis-1,2-DCE at this location.
- Figure 31w (Geological Cross-Section C-C' – cis 1,2-DCE in Groundwater) depicts two distinct plumes near Source Area B (MMW-11S/D, MMW-8S, MMW-10S/D) and Source Area A (MMW-P-01, MMW-P-11S/DR). Since no deep samples were taken from MMW-8S and MMW-P-01, there is no basis for depicting vertical delineation in these areas or two distinct plumes.
- Figure 31x (Geological Cross-Section C-C' – VC in Groundwater) shows an area of vinyl chloride contamination greater than 100 ug/L between monitoring wells MMW-P-13S/D and MMW-170S/D without any data to substantiate its presence.

These issues need to be corrected with revised maps or with additional sampling data to support the interpretations.

2. The cross-sections (Figures 5-7 and 31m-31x) and key boring logs omitted from the cross-sections underscore significant uncertainties in the interpretation of the plume behavior:
    - There are no monitoring wells deeper than the water table in the off-site source areas B and C. The existing deeper wells are up-gradient from these source areas. Also, there does not appear to be any evidence of a confining unit

between the water table and 'deep' monitoring wells. Soil samples taken at or just below the water table in these areas contain PCE near or in excess of ten percent of saturation which is indicative of DNAPL. Consequently, the plume in these source areas is not vertically defined.

- In general, most of the 'deep' monitoring wells extend to the first encountered till at approximately 35-40 feet below ground surface. However, this till unit is not continuous. In monitoring wells MW-165D, MW-166D, and MW-171D, the till is not encountered above 50 feet deep. In MMW-14D, the till was never encountered.
- Clarification of the 'deep' zone is necessary. Monitoring wells with this designation range from 33 to 60 feet deep with 5 to 15 foot well screens. It has not been demonstrated that these wells are monitoring the same hydraulic or contaminant horizons.
- Additional gaps in geologic and contaminant delineation are evident in the following locations:
    - Between MW-174D and MMW-13D
    - In the 40 to 50 foot depth down-gradient of MMW-13D
    - Between MW-169D and MMW-P-14D

In summary, more monitoring wells need to be installed through the shallow till into the next sand unit or until 15 feet of till thickness is confirmed. Cross-contamination of the lower unit should not be a significant concern because proper drilling, grouting, and sampling techniques can minimize any cross-contamination and consistent sampling will clarify actual contaminant levels.

3. Section 2.4.4 – Groundwater Plume Characteristics: This section states that the hydraulic conductivity of the upper sand and gravel aquifer ranged from 117.0 to 27.5 feet per day. This conductivity does not match the information contained in Appendix C of the RWP.

Responses to the comments discussed in this letter and plans to address data gaps should be submitted to VRP within 90 days from the date of this letter. If you have any questions, please contact me at (317) 234-2513, (800) 451-6027, or at canderson@idem.in.gov.

Sincerely,

Carmen Anderson, Senior Project Manager
Remediation Services Branch
Office of Land Quality

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